

### **REMARKS**

The Examiner is thanked for the performance of a thorough search. By this amendment, Claims 1-2, 4, 7, 8-15, and 16-22 are amended. No claims are added, canceled, or withdrawn. No new matter has been added. Therefore, Claims 1-22 are pending in the application.

Applicants thank the Examiner for the indication of allowable subject matter on page 6 of the Office Action. However, for the foregoing reasons, Applicants believe that the entirety of the subject matter claimed by Claims 1-22 of the pending application is patentable over the prior art.

Each issued raised in the Office Action is addressed hereinafter.

### **CLAIM REJECTIONS – 35 U.S.C. § 103**

Claims 1-3, 5-6, 8-10, 12-13, 15-17, 19-20, and 21 stand rejected as allegedly unpatentable over U.S. Patent No. 7,072,961 (“*Maclean*”) in view of U.S. Patent No. 7,209,458 (“*Ahvonen*”).

Claims 4, 11, and 18 stand rejected as allegedly unpatentable over *Maclean* and *Ahvonen*, and further in view of U.S. Patent No. 6,910,074 (“*Amin*”).

These rejections are respectfully traversed.

### **CLAIM 1**

Claim 1 features a method for managing a communications session with a device. The method establishes a communications session that supports a first quality of service level with the device. The method receives a request associated with the device for a service provided by an application server. The method receives the request at the application server. The method determines a second quality of service level to be supported by the communications session established for the device based upon the request for the service and policy criteria. The method then modifies the communications session established for the device by causing a layer-2 change

in the communications link used for the communications session, so that the communications session supports the determined second quality of service level instead of the first quality of service level. Causing the layer-2 change includes the application server signaling to change the communications established for the device to support the second quality of service level. By doing so, the method of Claim 1 enables end-to-end **application server-centric** quality of service management. Such a method may be useful, for example, for managing quality of service in network communications without relying on quality of service selection intelligence built into mobile devices. Such a method is not disclosed by the combination of *Maclean* and *Ahvonon*.

## INTRODUCTION TO THE PRIOR ART

*Maclean* describes a **network-centric** approach for quality of service management. The approach allows an application server to determine what [quality of service] QoS level **was previously negotiated** by the network elements within a wireless data packet network. *Maclean*, col. 5:38-50. By learning the negotiated QoS, the application server is able **to match** the QoS level previously negotiated by the network elements without wasting resources (by transmitting at a QoS level that the wireless data packet network cannot support). *Id.* Thus, the application server in *Maclean* is informed of an **existing** quality of service level that **was previously established** by network elements in a wireless network so that the application server **can match** the established quality of service level. However, the application server does not determine a second quality of service level to be supported by the network elements in the wireless network or cause the network elements to support the second quality of service level.

Like *Maclean*, *Ahvonon* also describes a **network-centric** approach for quality of service management. The approach of *Ahvonon* provides "a fully network controlled" policy based

admission QoS control of different network or servers providing services. *Avhonen*, col. 6:19-37. *Avhonen* describes and illustrates QoS controls 110 that are separate from the different network or services providing application services. *Id.*; along with Fig. 4 (showing QoS controls 110 separate from group of networks or services 260) and Fig. 5 ( showing Policy Control Function (PCF) 405 separate from group of network or services 260). QoS controls 110 include Policy Control Function (PCF) 405 for deciding what QoS treatment to allocate to a PDP context and for sending a decision on the QoS treatment to GGSN 440. *Id.* at col. 7:8-20. However, nowhere in *Avhonen* is it disclosed or suggested the decision on the QoS treatment is sent from an application server to provide application server-centric quality of service management.

#### ANALYSIS OF CLAIM 1 AND THE PRIOR ART

The Office Action contends that the following limitation of Claim 1 is disclosed in *Maclean* at col. 6:38-44:

determining, at the application server, based upon the request for the service and policy criteria, a second quality of service level **to be supported** by the communications session for the device; (emphasis added)

However, *Maclean* is at opposite with the approach of Claim 1. Rather than an application server determining a second quality of service **to be supported** by the communications session for the device, in *Maclean*, network elements other than an application server establish a quality of service level and then inform the application server about network performance associated with the established service level. *Maclean*, col. 5:38-50. The application server uses this network performance information so that it can **match** the established quality of service level. *Id.* However, nothing in *Maclean* suggests that the application server determines "a second

quality of service level to be supported by the communications session established for the device" as featured in Claim 1.

Figure 3 of *Maclean* and the accompanying description clearly show that *Maclean* is about informing application servers about a **network-established** quality of service level and not about an application server determining a quality of service levels to be supported by a communications session in a network. In step 304 of Fig. 3 of *Maclean*, a gateway device receives a signal from a network element within a wireless data network requesting that the quality of service be improved. *Id.* at col. 6:24-31. Note that this request comes from a network element that determines the quality of service level to be supported such as mobile terminal 112 and not an application server. In step 308, the gateway, and not an application server, determines whether the network can support the requested quality of service level. *Id.* at col. 6:31-35. Only if the network can support the requested quality of service level is the request to increase the quality of service level from the network element forwarded by the gateway to the application. *Id.* at col. 6:35-38. If the request is forwarded to the application server, the application server determines the requested quality of service level and then increases **its own service level** to match the requested service level provided the increase does not violate a service level agreement. *Id.* at col. 6:38-44.

However, unlike the "application server" as featured in Claim 1, the application server in *Maclean* does not determine a second quality of level to be supported by the communications session established for a device. Instead, in *Maclean*, it is network elements such as mobile terminal 112 and GGSN 148, and not an application server, that determine the quality of service level to be supported by a communications session. The application server in *Maclean* determines **only**, based on a request to increase the supported service level or network performance information, **whether it can match** the requested service level or match the

established service level. However, the application server in *Maclean* does not in any way whatsoever determine a second quality of service level to be supported by communications session for a device. Thus, it is respectfully submitted that *Maclean* does not teach or suggest the following feature of Claim 1 related to an application server determining a second quality of service level to be supported by a communications session for a device:

determining, at the application server, based upon the request for the service and policy criteria, a second quality of service level to be supported by the communications session for the device;

Further, the Office Action states with respect to *Maclean* that "[o]nce the application server [in *Maclean*] determines that it[']s okay to increase the QoS level, it sends a positive response to the gateway." Applicants disagree. There is nothing in *Maclean* that suggests that the application server sends a "positive" response to the gateway after determining that a request to increase or decrease the service level can be accommodated by the application server. *Maclean* merely states with respect to a request to increase the service level that "[i]f the QoS can be increased without violating the service level agreement, that it is improved in response to the request." *Id.* at col. 6:42-44. And *Maclean* states with respect to a request to decrease the service level that "a QoS change request is transmitted [by the gateway] to the application to reduce the QoS." *Id.* at col. 6:49-50. While the application server in *Maclean* may increase or decrease its own service level to match a requested or established service level, the application server does not appear to send a "positive" response to the gateway that signals to the gateway to modify a communication session for another device to support a second quality of service level instead of a first quality of service level. Thus, *Maclean* cannot possibly teach or suggest the following feature of Claim 1 related to modifying a communications session:

modifying the communications session by causing a layer-2 change in a communications link used for the communications session, so that the communications session for

the device supports the second quality of service level instead of the first quality of service level **including signaling by the application server to change the communications session with the device to support the second quality of service level.** (emphasis added)

*Ahvonon* does not overcome the deficiencies of *Maclean*. *Ahvonon* describes sending a decision on a QoS treatment from a Policy Control Function (PCF 405) to a Gateway GPRS Service Node (GGSN 440) which causes the GGSN 440 to "downgrade or upgrade" the QoS. However, nowhere in *Ahvonon* is an application server-centric approach to managing quality of service levels described. Specifically, *Ahvonon* illustrates the PCF 405 as separate from the application networks and servers. See, *Ahvonon*, Figs. 4 and 5. Thus, *Ahvonon* does not describe an **application server** "signaling ... to change the communications session with the device to support the second quality of service level" as featured in Claim 1.

Further, like *Maclean*, the quality of service level to be supported is determined by a network element such as PCF 405 and not by an application server as featured in Claim 1. Thus, it is respectfully submitted that *Ahvonon*, like *Maclean*, does not teach or suggest the following the following feature of Claim 1 related to determining, **at an application server**, a quality of service level to be supported by a communications session at an application server:

determining, **at the application server**, based upon the request for the service and policy criteria, a second quality of service level to be supported by the communications session for the device;

Based on the foregoing, it is respectfully submitted that the combination of *Maclean* and *Ahvonon* does not teach or suggest each and every feature of Claim 1. Reconsideration and withdrawal of the rejection under 35 U.S.C. § 103 with respect to Claim 1 is respectfully requested.

## CLAIMS 8 AND 15

Independent Claims 8 and 15 recites features similar to those of Claim 1 and are therefore allowable for the same reasons stated above with respect to Claim 1. Reconsideration and withdrawal of the rejections under 35 U.S.C. § 103 with respect to Claims 8 and 15 is respectfully requested.

## CLAIM 4

Dependent Claim 4 depends from Claim 1 and therefore contains all the features recited in Claim 1. By virtue of Claim 4's dependency on Claim 1, Claim 4 is allowable for the reasons given above with respect to Claim 1. In addition, Claim 4 recites additional features that independently render Claim 4 patentable over the combination of *Maclean*, *Ahvonon*, and *Amin*. Specifically, Claim 4 recites the following feature related to causing a layer-2 change in a communications link used for the communications session:

wherein causing a layer-2 change in a communications link used for the communications session, so that the communications session for the device supports the second quality of service level, includes generating and sending to a layer-2 gateway an Authentication, Authorization, and Accounting Change of Authorization (CoA) Request command that specifies a quality of service profile for the second quality of service level.

The Office Action does not rely entirely on *Maclean* or *Ahvonon* to satisfy the preceding feature of Claim 4. Specifically, the Office Action states that *Maclean* and *Ahvonon* do not disclose "generating and sending to a layer-2 gateway an Authentication, Authorization, and Accounting Change of Authorization (CoA) Request command that specifies a quality of service profile for the second quality of service level." Office Action, p. 5. Applicants agree. Instead,

the Office Action contends that the claimed subject matter absent from *Maclean* and *Ahvonon* is disclosed in *Amin* at col. 24:45-55 and col. 24:60-63.

*Amin* at col. 24:45-55 and col. 24:60-63 describes a Radio Access Network (RAN) component that sends an accounting message to an Authentication, Authorization, and Accounting (AAA) server **to report** (not cause) a QoS change. This accounting message is not sent for the purpose of causing a layer-2 change in a communications link for a communication session. Rather, it is sent only for the purpose of reporting a QoS change to an AAA server after the change has occurred. Further, one skilled in the art would understand that an AAA accounting message is not the same thing as an AAA change of authorization message. Still further, there is nothing in *Amin* that suggests that the AAA accounting message sent from the RAN specifies "a quality of service profile for the second quality of service level" as featured in Claim 4. Thus, it respectfully submitted that AAA accounting message disclosed in *Amin* does not teach or suggest the AAA Change of Authorization message featured in Claim 4.

Based on the foregoing, reconsideration and withdrawal of the rejection with respect to Claim 4 is respectfully requested.

#### CLAIMS 11 AND 18

Claims 11 and 18 recite features similar to those of Claim 4 and are therefore allowable for the same reasons stated above with respect to Claim 4. Reconsideration and withdrawal of the rejections with respect to Claims 11 and 18 is respectfully requested.

#### REMAINING CLAIMS

The pending claims not discussed so far are dependant claims that depend on an independent claim that is discussed above. Because each dependant claim includes the features

of claims upon which they depend, the dependant claims are patentable for at least those reasons the claims upon which the dependant claims depend are patentable. Removal of the rejections with respect to the dependant claims and allowance of the dependant claims is respectfully requested. In addition, the dependent claims introduce additional features that independently render them patentable. Due to the fundamental differences already identified, a separate discussion of those features is not included at this time.

### **CONCLUSIONS**

For the reasons set forth above, it is respectfully submitted that all of the pending claims are now in condition for allowance. Therefore, the issuance of a formal Notice of Allowance is believed next in order, and that action is most earnestly solicited.

The Examiner is respectfully requested to contact the undersigned by telephone if it is believed that such contact would further the examination of the present application.

Please charge any shortages or credit any overages to Deposit Account No. 50-1302.

Respectfully submitted,

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